Training Workshop

Technical Manual
Guidelines for groundnut seed production, storage and distribution for traditional farming systems
Session 3

Seed regulations

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Introduction

Production of certified seed is done under strict regulations involving translation of legislative data and techniques, which relate to certification. This regulation obliges all stakeholders in the seed sector to establish healthy and equitable relations among themselves and guarantees the technical (seed health, germination...) and genetic (variety, identity and purity) quality of commercial seeds.

Production, control and certification of groundnut seed can be managed by the application of legislative decrees on registration of varieties in the national catalog, production, inspection and certification. This is anchored on perfect knowledge of the variety concerned notably, origin, and mode of reproduction, characteristics and potential productivity. It is equally important to identify the perfect germplasm to avoid accidental or fraudulent drifts in order to conserve the genetic integrity, protect breeders' rights and give a guarantee expected by seed growers. The national catalog is an official document describing all known varieties in the country and is generally produced by the Ministry of Agriculture. The proposal to register a variety (official registration often done by the Ministry of Agriculture) in the catalog is submitted by a specialized agency (technical committee or commission) whose members are drawn from:
- Representatives of the provider
- Representatives of producers
- Representatives of users
- Officials from the seed control and inspection bureau
- Officials from the Ministry of Agriculture.

The breeder should only register a variety in the national catalog if the variety has superior performance or well known origin compared to the released variety (high yield, resistance to biotic and abiotic stresses, nutritional quality and other attributes).

Technical Standards

Regulations also consist of a series of rigorous standards, which should guarantee production of a variety that conforms to the original characteristics. These standards include:

- Conditions of admitting seed operators
  - Accessibility of the production area
  - Qualified personnel
  - Adequate agricultural material

- Obligations of seed multipliers
  - Present a coherent multiplication program
  - Only one variety to be grown uniformly in a field
  - Use seed of known quality
  - Accessibility of the farms
  - Adherence to all procedures such as cleaning before planting, threshing, sorting, winnowing, seed treatment
  - Use of clean bags in good condition
  - Transport and conservation under good conditions

- Organization of production
  - National regulations define several classes of seed (in principle: breeder, foundation, certified and commercial seed) and the number of years for each category.
• The regulations also set conditions for production, which must be respected by all operators (session 4).

Control of production
• A seed operator must declare a list of current contracts in the year that precedes a specified date decreed by the Ministry of Agriculture, indicating the species, seed category to be produced, acreage and location.
• Inspection organizations will conduct periodic visits during the growing season up to storage and commercialization.

Identification of seed lots
• Seed lots retained after inspection are processed, treated and stored.

Certification
• Seed lots presented for certification must meet all requirements.
• Accepted lots receive an approval certificate delivered by a competent service.
• Seed lots from previous production must also be re-inspected before distribution.

Seed stock
• Each approved seed organization must communicate the status of their seed stocks (transport to the inspection service).

Seed trade
• Seed trade is administered by defining conditions of identifying traders in seed, seed sampling and commercialization with notably
  • Obligation to producers
  • Quality standards
  • Validation of germination tests
  • Internal and external trade
  • Control of commercialization (administrative files, transactions)
  • Penalties.

Crop production and inspection
Seed production is generally through volunteer contractual growers chosen on the basis of their capacities. The seed organization, which involves producers, must make available necessary resources (materials for inspection, transport, seed storage facilities). On the basis of the criteria already described, the producer will be linked to the seed organization by a multiplication contract (annex 4). This contract defines obligations of each party in the contract and generally includes:
  • For the seed organization: provision of seed to multiply and other accompanying inputs (fungicide, insecticide, fertilizers etc). Buying the produce from the growers at a price fixed in advance corresponding to quality standards agreed upon. Such standards can be overestimated or underestimated based on the quality required.
  • For the producer: adequate material for the realization of the target multiplication, accept criteria for inspection services according the conditions of multiplication, quality of harvest, engagement to deliver the total produce at an agreed date.

Inspection during the growing season
This involves verification of operations outlined in the contract. It helps in estimating the quality of future seeds and eliminates production that does not conform to standards and defiant contracts (annex 5). These are based on:
  • Mean of operations
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- Quality of fields
- Seed used (origin, type)
- Previous crop
- Sowing (date and density)
- Crop management
- Varietal purity
- Harvest yield.

Inspection by an official from the inspection service is aimed at accepting or rejecting the product. Acceptance is the first stage towards official confirmation, which will be obtained at the time of delivery.

**Collection Inspection**

The seed organization will establish a system of collecting seed from growers. Generally collection points are established in the villages in the production zones. They are managed by a small team equipped with the necessary tools such as balances, quality control equipment (annex 6). The storage may be provisional as the seed organization could centralize several collection points for treatment and storage.

Control of individual seed lots, permits in part, verification of conformity to required standards to the level of multiplication concerned and helps determine the amount of premium to pay. The inspection service usually proceeds by examining the condition of the locations where the seed lots are stored and buying points as well by taking individual samples from each grower from which a weekly global sample is constituted. From this weekly sample, sub-samples are made and sent to a central laboratory for analysis (session 4). The sample has to be put into a bag and properly labeled usually with two tags (on inside and another outside), indicating lot number, collection point, name of producer, variety, level of multiplication, plot number and weight, date of sampling, name of agent (a duplicated sample should be kept to serve as a reference in case of litigation). The result of the analysis will permit certification or rejection of a particular lot of seed (annex 7).

**Storage/conservation inspection**

Storage period is relatively long (4 to 6 months) during which seed can be exposed to physical damage (heating) pest attack (rats, insects) or fungal contamination. Inspection services regularly control the physical status of the locality and level of infestation and where necessary take samples for analysis. Results are used to make the right decision (Annex 8).

**Practices and legislative instruments linked to exchange of genetic resources before the coming into effect of the Rio meeting on Biodiversity**

**Ex-situ material**

A large part of genetic resources exchange is based on ex-situ material. The exchanges are often between scientific collaborators or sometimes it is accompanied by a Material Transfer Agreement (MTA) which defines conditions of exchange.
In case of cooperative programs, the objectives are to develop joint knowledge of the genetic resources through (evaluation, characterization etc) or breeding following collective objectives and modalities fixed by the participants in the project. Engagement in terms of propriety, contribution (material, financial, personnel) of partners, diffusion of results, intellectual property rights (IPR) are contractually defined as in any other type of scientific cooperation. The notion of benefit sharing does not make much sense if the final program itself consists of generating results responding to the needs and objectives of the partners on agreed mutual basis.

Whenever the exchange of genetic material is independent of a joint program, generally MTAs are required (Annex 9). The most frequent clauses are:
- The authorized use of material provided for research purposes only as parental material for an improvement program
- Prohibition of all IPR on the material provided or the information/genes identified from the material
- Transmission to the provider scientific information gathered on the material
- The clauses of benefits sharing of IPR or license on the products from the use of the genetic material
- Prohibition of transfer of the material to a third party Seed approval from the provider before publication of results obtained
- Approval by the provider before seeking intellectual property right.
- Mention of origin of the genetic resource in all publications.
- These are just examples. There may be others.

In-situ material
Procedures are more complicated for in-situ genetic resources. The most frequently used examples are:
- Bilateral agreements between the state and an international body by conferring collection rights in a particular geographical zone in exchange for payments transfer of technology and capacity building. Among the most well known agreements is the Merk-INBO (Costa-Rica, 1991).
- Multi-partner agreements (government agencies and universities of the north, and development agencies of the south, private industries conferring rights to partners of the north the right to collect and evaluate material on a rental basis, access taxes, equipment and research on local priorities. This practice is widespread in USA though the ICBG (International Cooperative Biodiversity Group programs)

The instruments of jurisdiction need to be thoroughly studied on a case by case basis and revised to take into account the new objectives formulated by the Convention on Biological Diversity (CBD): valorizing genetic resources, contribution to cooperation and genetic diversity, equitable sharing of benefits derived from the utilization of the genetic resources

New practices concerning international exchange of genetic resources following the Rio meeting

The Convention on Biological Diversity (CBD) provides the application of the principle of national sovereignty to the biological resources with power to determine access to genetic resources belonging to the states and regulated by national legislation (Art. 15.1). The same article provides
that access to these resources must be facilitated (Art. 15.4) and prior consent with knowledge of the provider of the said genetic resources. In the same paragraph there is also the principle of equitable sharing of benefits accruing from the use of the genetic resources or commercial products from these resources. A number of countries consider access to genetic resources under the national sovereignty a means of putting in place a framework for benefit sharing.

About thirty national regulations are in operation. The first to be in place for example in the Philippines was limited to regulation of access and benefit sharing. These regulations must be developed within a framework for management of biological diversity, all exchange of genetic resources must be done with written agreement, which clearly identifies signatories and describes their respective engagements.

For practical purposes, while waiting for a system of multilateral exchange (currently under negotiation in conformity with the Rio and International Undertaking on Genetic Resources) to be put into place, exchange must take place under a bilateral agreement eventually completed by the national legislation following these principles:
- A written agreement clearly identifying signatories and describing their engagements
- Prior consent and knowledge on the part of the provider
- Condition of equitable sharing of benefits accruing from the utilization of the genetic resources.

The position of International Centers

International Agricultural Research Centers (IARCs) are among the most important holders of ex-situ genetic resources and these represent only about 10% of the total (estimated to be more than 5.5 million entries) with about 600,000 entries. Despite their name, these international organizations do not have international organization status. Constituted within the jurisdiction of the host countries, they are largely administered by their own legalization, attenuated on certain points (fiscal) by headquarter agreements. At the time of negotiations these headquarter agreements in the 1970s and 1980s had nothing to justify a specific regime for genetic resources used and maintained by the centers.

In 1994, collections held by the centers were henceforth theoretically administered by the right of the host countries in the same manner for other facilities (buildings, vehicles) used by the centers. Before clarifying the situation the centers placed their collections under the auspices of FAO following the basic principle: Genetic material is not considered as the property of international centers but are kept in trust for the international community and are freely accessible.

Conscious of the fears raised by the development of Intellectual Property Rights, the IARCs wanted to assure the international community by completing this under the auspices of FAO through Material Transfer Agreements (MTA) linking beneficiaries of the genetic resources with the centers with the following clauses:
- The beneficiary agrees not to claim ownership of the material received nor seek intellectual property rights over the germplasm or related information.
- The beneficiary agrees to ensure that subsequent persons or institutions to whom samples of the germplasm are made available are bound by the same provision.

This framework, however, appears insufficient among the G7 countries that consider this large diffusion of genetic material collected before 1993 on their territory to constitute a means of countering their national legislation to access, allowing private enterprises to generate unshared benefits. Utilization of genetic resources held by IARCs is at the center of negotiations to revise the
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International Undertaking on Plant Genetic Resources for Food and Agriculture in the framework of FAO and to reflect the framework of CBD on access to ex-situ collections acquired before its coming into force. The management of access to their genetic resources independent of international/scientific entities needs to be determined by states through political negotiations.

Phytosanitary standards for seed exchange

Introduction of germplasm should not endanger the new habitat with new pests and diseases. In Africa, the Inter-African Phytosanitary Convention was adopted in 1967. The inter-African Phytosanitary Council of the Organization of African Unity (CPI-OAU) is in charge of its application. In sub-Saharan Africa, the exchange of crops and crop products is regulated by the phytosanitary and Pesticide common Regulation adopted in 1992 in Ouagadougou (Burkina Faso).

Legislative measures

Every seed consignment must be accompanied by:
- An import permit (annex 10) from an appropriate authority in the importing country.
- A phytosanitary certificate certifying the disease-free nature of the seed from a competent authority of the exporting country (annex 11).

General measures

The following procedures must be applied:
- Plant protection scientists must inspect the source crop from which the seeds are to be exported
- Seeds should be collected from healthy plants
- Each sample should be thoroughly examined
- The seeds should not be treated to facilitate inspection by appropriate quarantine services of the importing country.
- Groundnut should be exchanged only as seeds
- The packaging should be destroyed
- The imported material should be handed over only after clearance by quarantine and registration.

Discussion

Seed regulation is essential in the production of certified seed. It ensures that all actors in the sector are on the same wavelength and express freely in a healthy and equitable environment. The technical and genetic quality of commercialized seeds are thereby guaranteed and the activities of seed producers are protected by rigorous standards. Regulation also protects the farmer by guaranteeing use of good quality seed.

An example of seed regulation was put in place in Senegal. Twelve years later the national assembly adopted the law regulating seeds in 1994. This was followed by application decrees on instituting a national catalog, creation of a national consultative committee on seeds and production, regulation and control, certification and seed trade. Despite the difficulties encountered in this process, there is a functional seed regulation in place.

National catalog
This tool is not universal in all countries of the sub-region but appears to be indispensable as a means of enhancing transfer of research accomplishments. The more this catalogue is made available to the producers the greater the interest in research results are, leading to increased demand for new varieties.

National Consultative Committee
These institutional systems exist in certain countries in the sub-region but in others, these committees are not functional and do not represent the interest of all stakeholders. Nevertheless, it is critical that the state, producers, private industries and consumers are represented on these committees. This allows more precise and efficient interventions. For example if the committee passes decrees, these are easily applied if this condition is met. On the other hand, non-representation can lead to blockage of interventions.

Production standards
The seed regulation must allow quality production recognized by Inter-professional organizations. It was apparent from the discussions that production standards that guarantee high quality are not easily applied in many countries where the seed sector is not well organized. They are particularly difficult to apply to seed outside the official channels.

Regarding seed exchange at the regional level, there was unanimity on the necessity to have mechanisms to fix minimum standards to facilitate the exchange. These standards should relate to:
- Mode of production
- Control of production and analysis
- Sampling methods and production analysis
- Variety purity by generation and germination rates

Several suggestions were made on how to improve seed quality in the informal sector:
- Put in place farmer groups to multiply certified seed. These groups could interface with smallholders through a system of exchange for improved seed against grain
- Put in place appropriate rural credit schemes accessible to these farmer groups
- Produce large quantities of N1-R2 by pilot farmers who will eventually become contract growers in the sector and will permit renewal of personal seed reserves.

In conclusion, recognition of quality and its impact on production is shared by users and stakeholders of different commercial seed production chains (private producers, farm level, informal market). This will guarantee the development of sustainable systems for seed production and distribution.